

Specific Heat and the First Law of Thermodynamics

Purpose: To use the concepts of specific heat and the first law of thermodynamics to predict the temperature of bodies in thermal equilibrium.

Introduction: .

Apparatus:

- safety goggles
- 2 1,000 mL beakers
- Hot plate
- ring stand
- flint lighter
- tongs

Materials:

- water

Procedure:

1. Place about 500 mL of water in a beaker.
2. Boil about 400 mL of water in a beaker on the ring stand with the hot plate.
3. Measure the initial temperature of each one and record your data in the table below.

Lab 3 Data			
substance	mass of substance	initial temperature of substance	specific heat of substance

4. Either add the hot water to the cold or the cold water to the hot. Record which one you did, and the final temperature of the water after mixing.
5. Predict what the final temperature should be Show work:

6. What is your percent error (be sure to convert to Kelvin for this one)?

7. Give at least *four* reasons why your prediction and measurement don't agree. Also state how that reason would affect your measured value (i.e., higher or lower prediction and *why*).
 - a.
 - b.
 - c.
 - d.